



JSNA Protected Characteristics Profiles

No 10: Diabetes

READER INFORMATION

Title	JSNA Protected Characteristics Profiles – No10: Diabetes
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Circulated to	JSNA Reference Group & Public Health Intelligence Network
Version	1.1
Status	Public
Date of release	April 2019
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Foreword

Joint Strategic Needs Assessments (JSNAs) are the process through which local areas identify the current and future health and wellbeing needs of their local population. These needs can relate to medical issues such as heart disease or dementia, through to wider influences on an individual's health and wellbeing, such as housing and employment. A key element to the JSNA process is to understand how different population groups may be more adversely affected than others i.e. to understand our inequalities in health.

To support this agenda, a number of the JSNA leads from across Cheshire & Merseyside and the North West have collaborated to develop this series of Protected Characteristics Profiles. The documents provide an overview of how various health and wellbeing issues affect each of the population groups listed within the Equality Act 2010. We recognise that evidence and research in this field is constantly evolving, and so these profiles are designed to provide a starting point for local commissioners and policy makers, who may be able to supplement them with more detailed local knowledge. The documents are not systematic review, rather a summary of key sources of information that will support local decision making. Over time the aim is to build on these profiles, providing further detail when it becomes available and covering a more extensive range of topics. With that in mind we would welcome and encourage feedback on these reports.

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Definition of Diabetes

Diabetes is a long term condition that affects around 3.2 million people in the UK, and a predicted additional 850,000 people who have not yet been diagnosed. Estimates suggest that the number of people with diabetes is expected to rise to 4.2 million people by 2030, affecting almost 9% of the population. It is an important health issue as diabetes increases someone's risk of a heart attack or stroke, eye problems and limb problems. Diabetes is present when there are high levels of glucose in the blood, as a result of the body not being able to use it properly. There are two main types of diabetes: Type 1 diabetes and Type 2 diabetes, which account for 98% of all cases of diabetes.^[1]

Type 1 diabetes accounts for about 8% of all cases of diabetes. It occurs when the body is unable to produce insulin, the hormone required for glucose to enter cells and be used for producing energy for the body. It is unknown why some people are unable to produce insulin, though we understand that this is usually detected early in life, and there is a likely genetic link. There is no preventative action that can be taken. Type 1 diabetes is treated by daily insulin injections, a healthy diet and regular physical activity.

Type 2 diabetes occurs when insufficient insulin is produced, or the insulin produced does not work properly, which has the same effect on the body as Type 1 diabetes. Typically, this type of diabetes occurs later in life. It is treated with a healthy diet and regular physical exercise, and medication is often also required.

Type 2 diabetes accounts for about 90% of all cases of diabetes. Although it is usually diagnosed in adults aged over 40, the increasing prevalence of obesity in the population means that younger people are now being diagnosed with Type 2 diabetes more often than in the past. There is a high prevalence among south Asian and black populations in whom it is more common to develop diabetes at a younger age. There is a familial link also, so people with a close family member with diabetes are at increased risk of developing it themselves.

Obesity is the primary modifiable risk factor for diabetes. Without the intervention of healthy diet and exercise, obesity can develop into diabetes in a relatively short period of time. The increasing prevalence of diabetes in younger people can be attributed to the obesity epidemic in these age groups. In addition to obesity, smoking and poor control of one's diabetes are risk factors for vascular complications in people with diabetes.

Other risk factors for type 2 diabetes include high blood pressure, having previously had a stroke or a heart attack, polycystic ovary syndrome and severe mental health problems.

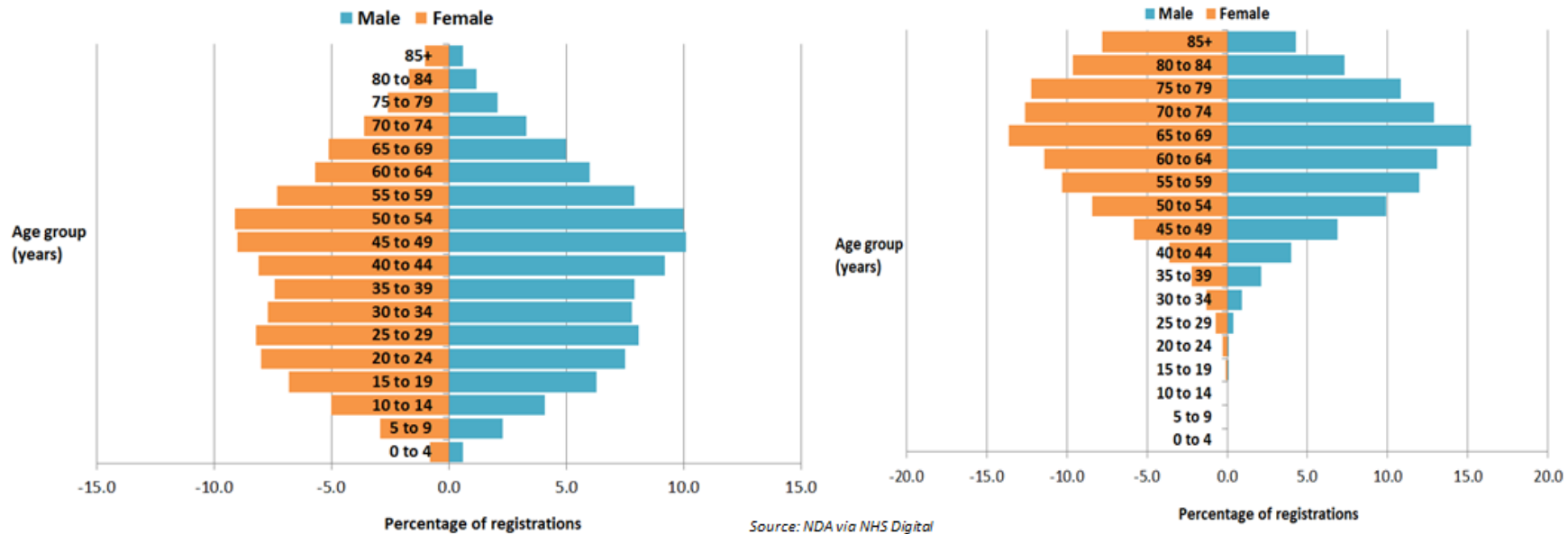
1. Age

Type 2 diabetes is the more prevalent type. It is rare in young people & adults becoming more prevalent in:

- White people aged over 40
- Black and Asian people aged over 25

The National Diabetes Audit (NDA) confirms this, providing data on the prevalence of both Type 1 and Type 2 diabetes by age. The 2016/17 audit showed:

Figure 1: Prevalence of Type 1 and Type 2 Diabetes amongst the NDA population, by age and gender, 2016/17



This data is available down to GP practice level.

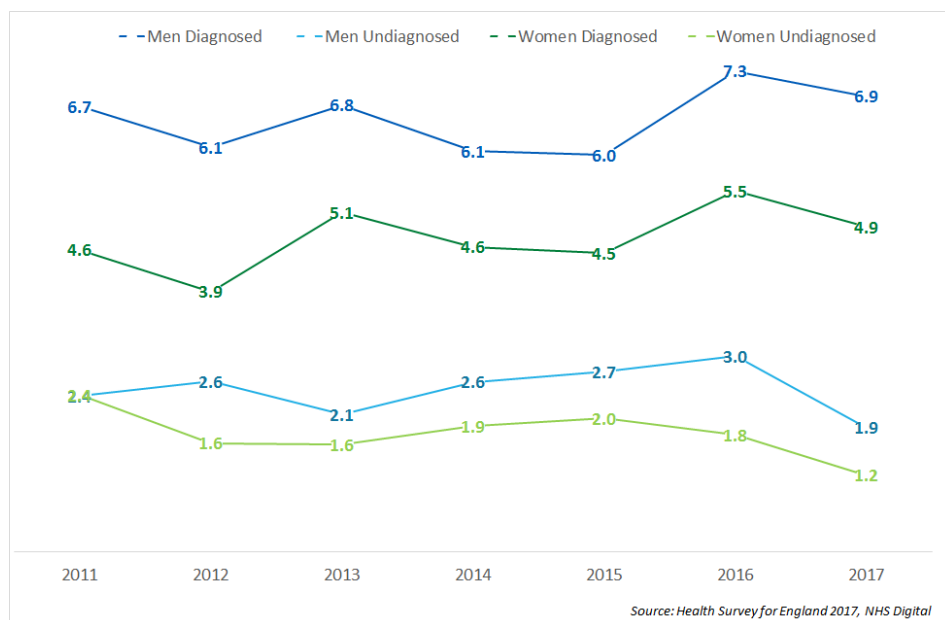
(See National Diabetes Audit 2016-17 Interactive report for England.xlsx at <https://digital.nhs.uk/data-and-information/publications/statistical/national-diabetes-audit/national-diabetes-audit-report-1-findings-and-recommendations-2016-17>)

2. Gender

The 2017 Health Survey for England (HSE)^[2] found 8% of men and 5% of women reported doctor-diagnosed diabetes. Prevalence increased with age and was more common in men than women. It is likely that the proportion of adults in the population with doctor-diagnosed diabetes was between 7% and 9% of men and between 5% and 6% of women.

The proportion of adults with doctor-diagnosed diabetes increased between 1994 and 2017, with some year-on-year fluctuation, from 3% to 8% among men and from 2% to 5% among women.

Figure 2: Levels of diagnosed and undiagnosed diabetes, by gender, Health Survey for England 2017



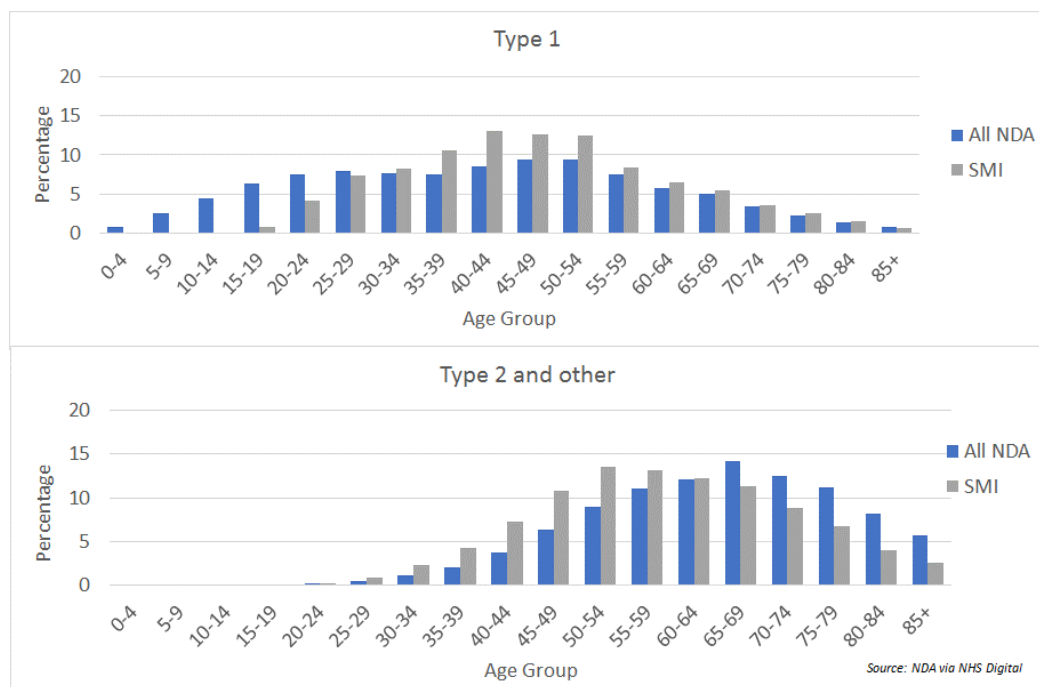
3. Disability

Diabetes and psychiatric disorders share a bidirectional association -- both influencing each other in multiple ways. Epidemiological studies have repeatedly investigated the association between depression and metabolic syndrome (MetS). Whilst the results have been inconsistent a meta-analysis 29 cross-sectional and 11 cohort studies indicate a bidirectional association between depression and MetS. These results support early detection and management of depression among patients with MetS and vice versa.^[3]

Studies have shown the level of Type 2 diabetes to be higher amongst those with severe mental illness (SMI). In a US study amongst more than 15,000 patients with severe mental illness, 28.1% had Type 2 diabetes in contrast to 12.2% of the general population. It also noted that those with SMI from non-white ethnic origins had even higher rate than whites.^[4]

In the UK, the National Diabetes Audit (NDA) 2016-17^[5] included analysis of the prevalence of Type 1 and type 2 diabetes amongst those with SMI and compared the age-specific rates to that of the total audit population. Whilst patterns were broadly similar between all NDA patients and those with SMI, it too found higher prevalence in the SMI population, especially for Type 2 amongst the younger age groups. This is an important finding as younger people fall outside of proactive case finding initiatives such as the NHS Health Checks Programme and so may be more likely to go undetected for some time.

Figure 3: Percentage of people with diabetes, by diabetes type, age and SMI diagnosis, 2016-17



Diabetes is associated with an increased likelihood of anxiety disorders. In one of the largest surveys carried out by Diabetes UK, during the summer of 2017 8,500 people of different ages, ethnicities and backgrounds from across the UK shared their experiences living with diabetes today, and what their hopes and fears were for the future.^[6]

Participants said that diabetes affects their emotional wellbeing, with three in five (64%) saying that they often or sometimes feel down because of their diabetes. One in three (33%) said that diabetes got in the way of them or a family member doing things they wanted to do. Only three in ten (30%) said they definitely felt in control of their diabetes.

3.1. Diabetes as a disability

People with diabetes may have a condition severe enough to be classed as disabled under the Equality Act 2010 according to the charity Diabetes UK. This law defines a disability as a “physical or mental impairment that has a substantial long-term negative effect on a person's ability to carry out normal day-to-day activities”.^[7] Diabetes UK also suggest that for those who are diagnosed with diabetes whilst currently working for a company, the company will be expected to make reasonable adjustments to accommodate the condition, if they are necessary. What qualifies as a reasonable adjustment is open to discussion.^[8]

Examples of reasonable adjustments could include: adjusting working times, changing the duties the employee is required to undertake, allowing time off for doctor's appointments, or even transferring to a more appropriate position (if available).

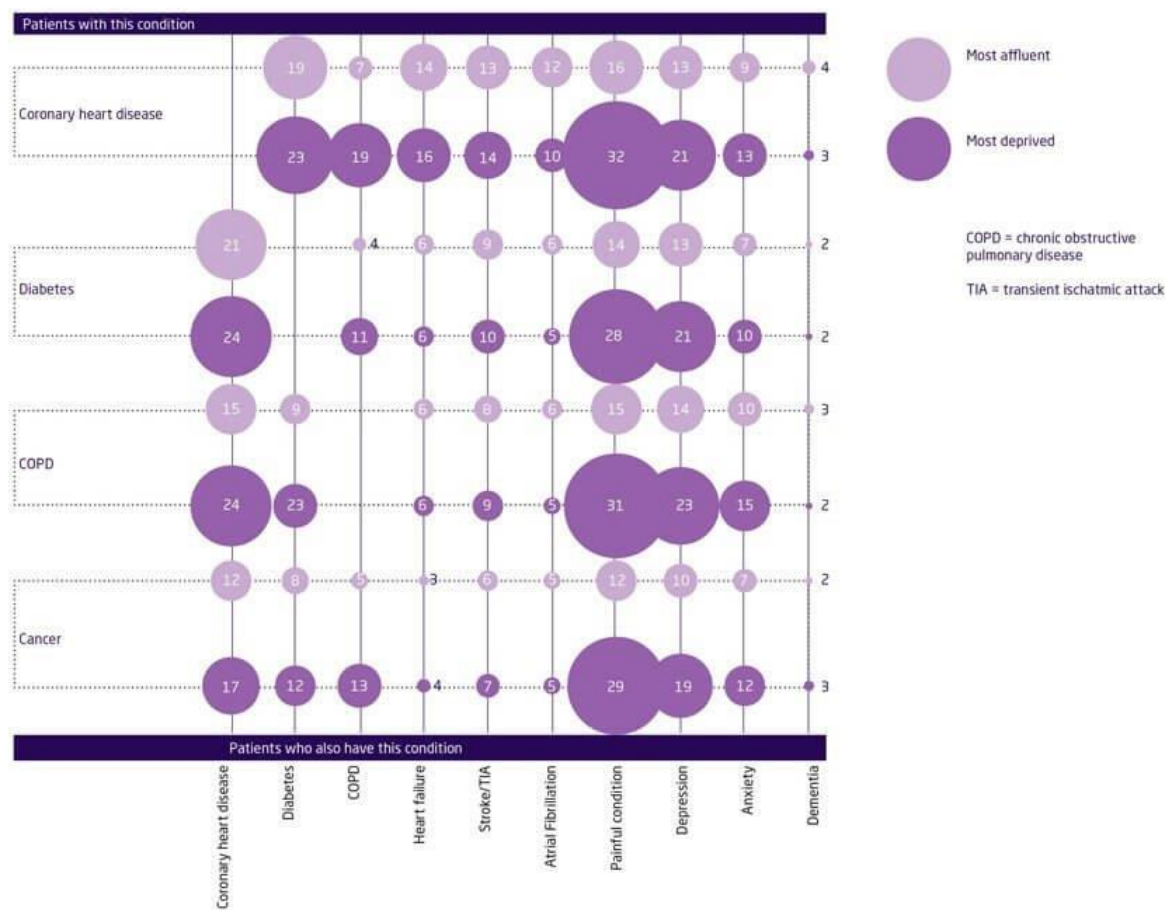
However, in 2014, the Employment Appeal Tribunal (EAT) decision in *Metroline Travel Ltd v Stoute* cast doubt over type 2 diabetes being classed as a disability under the Act. That said, a more recent decision could change the findings in *Metroline*. At the preliminary hearing of *Taylor v Ladbrokes Betting and Gaming Ltd*, it was decided that he was not disabled. However, a misinterpretation of the medical evidence, and in particular the judgement of the likelihood of the progressive nature of the condition means the case is being reheard.^[9]

Notwithstanding the position regarding employment rights and protection, a systematic review and meta-analysis to estimate this risk of disability as a result of diabetes, found that diabetes is associated with a strong increase in the risk of physical disability.^[10]

3.2. Diabetes as a co-morbidity

Data from Barnett et al^[11] shows that diabetes is most associated with cardiovascular disease. There is also an association with pain and with depression. The same patterns are seen for both the most and least affluent, although the level of co-morbidity is much greater amongst deprived populations.

Figure 4: co-morbidities



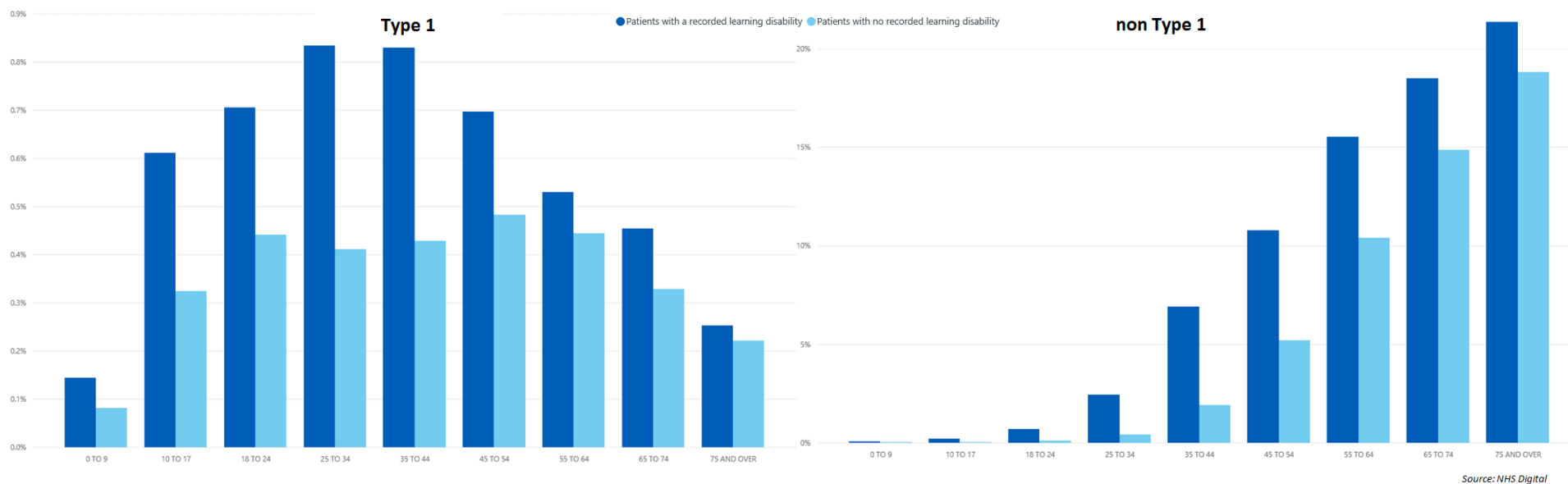
3.3. Prevalence amongst those with learning disabilities

Studies have shown individuals with a learning disability are at a higher risk of developing Type 2 diabetes.^{[12][13][14]} The reasons for higher estimates being based on the following:

- People with learning disabilities leading a more sedentary lifestyle, undertaking low levels of exercise
- consuming high fat diets
- being prescribed high levels of antipsychotic medications, which can contribute to obesity^[15]

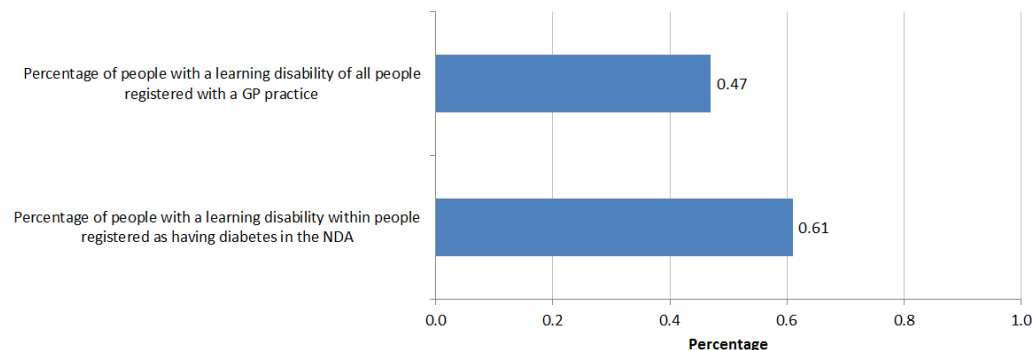
In 2016, NHS Digital in association with Public Health England, produced the first experimental GP data showing the health needs of people with learning disabilities for the year 2014-2015. The report showed higher rates of obesity (a risk factor for Type 2 diabetes) in all age groups for women with a learning disability compared to those without the disability. Higher rates of obesity were also seen in all age groups for men with a learning disability compared to those without except for ages 55 and over.^[16]

Figure 5: Diabetes prevalence (per cent) by age and learning disability status, England, 2014-15



Data is also available from the National Diabetes Audit (NDA). It confirms these findings; namely that whilst people with learning disabilities represent 0.47% of the GP registered population, they represent 0.61% of those registered with diabetes.

Figure 6: Percentage of people with learning disabilities with a diagnosis of diabetes, NDA 2017



Source: NDA via NHS Digital

Very small numbers in the Halton sample of the NDA for Type 1 diabetics means this additional burden is not seen. However, the standardised prevalence ratio is only slightly lower than England, showing a burden one and a half times that of the general population.

Figure 7: Standardised prevalence ratio, Type 1 and non-Type 1 diabetes amongst people with learning disabilities in Halton, NDA 2017

	Type 1	non-Type 1
Halton	1.0	1.4
England	1.6	1.7

Source: NDA via NHS Digital

4. Pregnancy & Maternity

Whilst Type 2 diabetes is rare in those under the age of 40, women of child-bearing age by already have either Type 1 or Type 2 diabetes at the point their conceive. Gestational diabetes, when women cannot produce enough insulin to meet the extra demands of pregnancy, affects about 5% of all pregnancies.

Studies looking at the risk of developing type 2 diabetes post gestational diabetes have varied considerably in their diagnosis criteria used and follow-up period amongst other things.^[17] Regardless of which criteria are used, a history of gestational diabetes confers a large excess risk of progression to type 2

diabetes in later life.^[18] After the baby is born, 5%-10% of mothers who had gestational diabetes will have type 2 diabetes. Of those this does not happen to, there is a 20%-50% chance of developing type 2 diabetes within 10 years.^[19]

Diabetes in pregnancy, whether pre-existing or gestational, increases the risks of stillbirth, perinatal death and congenital anomaly as well as complications during delivery.^[20] Maternal overweight and/or gestational diabetes affect Caesarean section rates, induction rates and birthweight.^[21] The number of pregnancies complicated by diabetes is increasing because of the increasing prevalence of obesity and Type 2 diabetes in young women. Children born to women who had gestational diabetes are more likely to develop diabetes as well as other problems such as heart disease.^[22] It is therefore important for both women and child that the gestational diabetes is managed well and a healthy lifestyle is adopted.

5. Race

Type 2 diabetes is up to six times more common in people of South Asian descent and up to three times more common among people of African and African-Caribbean origin.^[23] Studies show that people of Black and South Asian ethnicity also develop Type 2 diabetes at an earlier age than people from the White population in the UK, generally about 10 years earlier.^[24]

Unlike age and gender, an analysis of diabetes prevalence by ethnic group is not routinely included in the Health Survey for England. The last time was the 2004 survey, which focused on health of ethnic groups. It showed that doctor-diagnosed diabetes was almost four times as prevalent in Bangladeshi men, and almost three times as prevalent in Pakistani and Indian men compared with men in the general population. Among women, diabetes is more than five times as likely among Pakistani women, at least three times as likely in Bangladeshi and Black Caribbean women, and two-and-a-half times as likely in Indian women, compared with women in the general population.^[1]

Although the NDA analysis only considers the prevalence amongst those participating by broad ethnic groups, it does show a higher percentage of those with Type 2 diabetes being of minority ethnic origin than they represent within the general population.

1 <https://digital.nhs.uk/data-and-information/publications/statistical/health-survey-for-england/health-survey-for-england-2004-health-of-ethnic-minorities-main-report>

Figure 8: Prevalence of diabetes by ethnicity group

	Ethnicity Group		
	White	Minority Ethnic Origin	Ethnicity unknown /Not Stated
Type 1 Diabetes	76.3%	8.4%	15.3%
Type 2 Diabetes	64.4%	19.4%	16.3%
Overall Population	86.0%	14.0%	

Source: NDA 2016/17; overall population - Census via ONS

In 2010 a research project reported that whilst there has been little research on the impact of quality improvement initiatives on ethnic disparities in diabetes management in the UK, it appeared ethnic disparities persisted in diabetes management. For instance in the proportion of black patients achieving the target for blood pressure management. However, it noted that these were starting to be addressed, particularly in the South Asian group and that all ethnic groups had benefited from quality initiatives in the UK.^[25]

The proportion of people receiving the 8 NICE recommended care processes and achieving the 3 treatment targets is not routinely analysed by ethnicity within the NDA. As part of a control strategy current guidance in the UK recommends more intense surveillance of HbA1C levels among those of South-East Asian or Chinese ethnicity above a BMI of 23. Analysis of data on BMI status and HbA1C levels from the 2013 Health Survey for England^[26] suggests poorer disease identification and management amongst black & minority ethnic populations compared to white population. People of Asian ethnicity were found to have a 5% point higher risk of undetected diabetes than people of White ethnicity. With respect to disease management, Bangladeshis and Pakistanis were found to be at a 28% point and 21% point higher risk of poor disease control respectively than Whites. There was no significant pattern between income and disease management found among Pakistanis but poorer disease control was more evident among more affluent than poorer Bangladeshis.

6. Religion & Belief

No associations found

7. Sexual Orientation

Data analysed from the 2014 US Behavioral Risk Factor Surveillance System for 3,776 Lesbian, Gay and Bisexual adults and 142,852 heterosexual adults aged 18 years and over found:^[27]

Proportions self-reporting diabetes diagnosis were

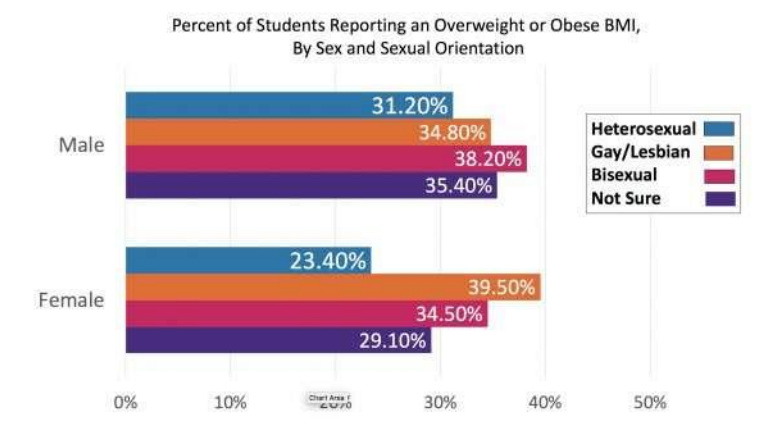
- 14.2% of bisexual men
- 11.4% of gay men
- 10.8% of heterosexual men
- 8.5% of lesbians
- 5.7% of bisexual women
- 10.2% of heterosexual women

After adjusting for age, race/ethnicity, Body Mass Index, socioeconomic characteristics, health behaviours, and healthcare access, diabetes prevalence remained elevated among gay men and bisexual men compared to heterosexual men. Among women, levels of diabetes remained higher among lesbians compared to heterosexual women although bisexual women had slightly lower odds.

Whilst this was self-reported data with the possibility therefore of recall bias, plus possible selection bias with self-reported sexual orientation using data from only 19 states, it nevertheless is an important study showing differences in diabetes prevalence by sexual orientation.

This may be due to differences in levels of sedentary behaviour, healthy eating and resultant levels of obesity. A North Western Medicine study found lesbian, gay, bisexual and questioning youth are more likely to develop Type 2 diabetes, be obese and engage in less physical activity and more sedentary activities than heterosexual youth.^[28]

Figure 9: Obesity levels amongst students, by sexual orientation, Northwestern Medicine, 2018



8. Marriage & Civil Partnership

No associations found

9. Gender Reassignment

No associations found

10. Deprivation

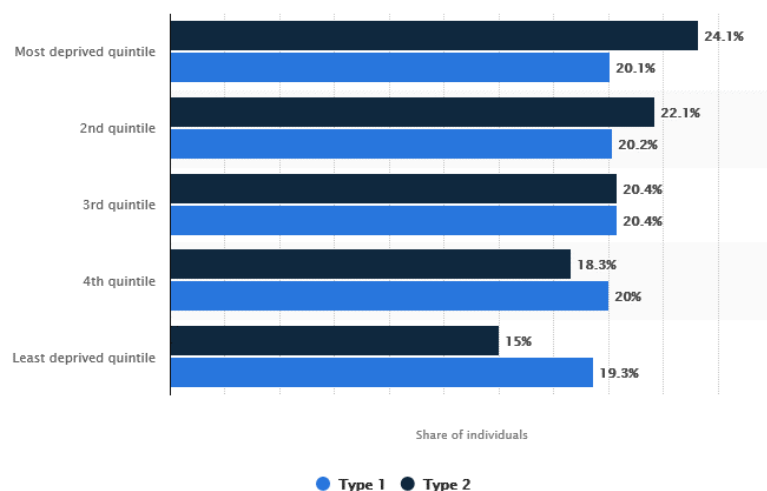
Health equity can be defined as the absence of unfair and avoidable or remediable differences in health amongst social groups, with socioeconomic position being related to differential exposure to living and working environments which in turn lead to differential vulnerability to adverse health outcomes.

There is strong evidence for the socioeconomic patterning of the major known risk factors for type 2 diabetes in the UK i.e. for differential vulnerability. For example, obesity, central obesity, self-reported physical activity, smoking, and self-reported consumption of fresh fruit and vegetables are all lower in

adults in the poorest compared to better off households. Gradients in some of these risk factors by household income are also highly apparent in children (under 16 years), particularly overweight and obesity in girls, lower consumption of fresh fruit and vegetables and exposure to tobacco smoke.^[29]

As a result, the prevalence of type 2 diabetes is 40% more common among people in the most deprived quintile compared with those in the least deprived quintile.^[30]

Figure 10: Diabetes prevalence by deprivation quintile, NDA, 2016/17



11. Other Vulnerable Groups

11.1 Offenders

Most studies of the health needs of offenders focus on issues around alcohol, drug misuse and mental health. Few have looked at the prevalence of long-term conditions. One study that looked at the prevalence of diabetes among 915 sexual, violent, and non-violent non-sex offenders was found to be more than twice the prevalence in the general population.³¹

11.2 Refugees and Asylum Seekers^[32]

The health needs of people seeking asylum may be complex. Although many people seeking asylum will have no identified pre-existing medical needs, issues may emerge following entry into the UK. Some factors that predispose asylum-seekers to increase risk of poor health include:

- Lack of knowledge of available health services and entitlements
- Difficulties in accessing services
- Language barriers among some, but not all people seeking asylum, including the need for access to translation and interpretation services.

Some people seeking asylum may have additional health needs compared to others for reasons such as:

- Coming from an area where healthcare and social conditions are poor, or have collapsed. This may mean that basic medical care (such as vaccinations or management of chronic health conditions) may not have been available.
- Experienced travel to the UK under challenging conditions, including extremes of temperature and cramped conditions.
- Having come from refugee camps or areas involved in conflict. They may therefore have untreated injuries and be at increased risk of malnutrition and communicable diseases.
- Having experienced violence, torture, rape or imprisonment prior to arriving in the UK, with concomitant risk of physical and mental health problems.
- Having left behind family, friends and social networks.

The most common health needs of people seeking asylum that have previously been identified include:

- Consequences of injury and torture, including mental health issues and disabilities
- Communicable diseases, including suboptimal vaccination
- Sexual health needs
- Chronic diseases such as hypertension and diabetes
- Dental disorders
- Complications of pregnancy and child-birth

11.3 Homeless

Analysis of 27 Homelessness Health Needs Audits carried out across England showed the prevalence of diabetes was 3%, much lower than the general population prevalence.³³ Whilst this represents only a small number of individuals this figure does seem to be supported by a report from Public Health England.³⁴ It found that whilst 41% of homeless people reported a long-term physical health problem, compared to 28% in the general population, research by the Local Government Association found prevalence of reported diabetes ranged from 0% to 4%

11.4 Older People living in Residential and Nursing Homes

The health and wellbeing of people living in care homes has been a neglected field of study. 2010 Diabetes UK report^[35] states that residents with diabetes within institutional settings

“appear to be a highly vulnerable and neglected group of subjects, and are characterised by a high prevalence of macrovascular complications, tremendous susceptibility to infections, increased hospitalisation rates compared with ambulatory patients with diabetes, and high levels of physical and cognitive disability” They have 2an increased likelihood of frailty and multiple co-morbidities, and of being part of system associated with unstructured diabetes care, lack of clear boundaries of clinical responsibility, and an unwillingness, which is sometimes misguided, by many healthcare professionals to intervene actively in goal attainment and enhancing diabetes care.”.(page 1)

The report further cites a 2001 study which found the prevalence of known diabetes within residential and nursing homes in England has been estimated to be as high as 26%. Diabetes is known to double the risk of admission to a care home and may account for up to one in four residents. Residents with diabetes have an increased risk of disability, pressure sore development, and hospital re-admission. The highest rates of undiagnosed diabetes in EMI residential care homes.

A 2012/13 audit of care homes stated that in many cases older people with diabetes in care homes are suffering unnecessarily and even dying prematurely. Up to one in four older people in these settings have diabetes and a similar proportion may have undiagnosed diabetes.^[36] This first-ever England-wide Care Home Diabetes Audit revealed a lack of comprehensive assessment, monitoring and specialist care. It found just 10.4% (5087 of 48978 people included in the audit) with *reported* diabetes, noting this was at odds with previous research. Whilst a third of responding care homes said they had a written policy for managing hypoglycaemia, only about half stated they assess a resident’s knowledge of hypoglycaemia (low blood sugar) using a standard protocol or asked residents with diabetes if they know the symptoms/signs of hypoglycaemia. Nearly half (47%) of homes said that they were unaware of the 2010 Diabetes UK Care Home Guidelines. The lack of sysyems and awareness is especially worrying given older people with diabetes often have other long-term health

conditions such as dementia, mobility and sensory problems making self-care difficult, leaving many are dependent on care providers. As people with both types of diabetes are living longer, and many people with type 2 diabetes progress to insulin treatment, it is fair to assume that there will be a growing number of insulin treated dependent older people resident in care homes.^[37] with a German study finding dementia patients receive fewer diabetes-related medical examinations than recommended, especially in cases of higher care dependency and particularly in nursing homes. This suggests lacking awareness regarding the specific challenges of combined diabetes and dementia care.^[38]

11.4 Educational Level

Studies have shown an association between education level and Type 2 diabetes that is predictive. For example, the European countries: the EPIC-InterAct study found that compared with participants with a high educational level, participants with a low educational level had a higher risk of Type 2 diabetes that was only partially explained by variations in BMI.^[39] A range of mediators can explain at least part of the association. Seven of the variables considered in the ESTHER study conducted in the German federal state of Saarland explained a proportion of the education–Type 2 diabetes relationship (body mass index, alcohol consumption, hypertension, fasting triglycerides, high-density lipoprotein (HDL) cholesterol, physical activity and smoking status), where the contribution of the variables ranged from 1.0% to 17.7%. Overall, the mediators explained 31.7% of the relationship.^[40] Associations may be compounded by other factors such as race; for example a US study found both White and Hispanic men who had less than a high school education had consistently higher odds of diabetes than men with a bachelor's degree or higher level of educational attainment (42% higher and 64% higher respectively). However, no relationship between educational attainment and odds of reporting diabetes was observed in Black men.^[41]

Outcomes are also affected by level of education. A US study found the risk of mortality differs substantially according to educational level among individuals with diabetes. Although relative educational disparities in mortality are weaker in adults with versus without diabetes, their absolute impact is greater and translates into a major mortality burden.^[42]

Conversely a Danish study found that compared to the general population those with Type 1 diabetes experienced lower health-related quality of life, were more frequently unemployed, had more sick leave per year and were slightly better educated.^[43]

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